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	Onin.	Lobo.		Onin.	Lobo.
One	Sa	Samosi	Twelve	{ Pusū resi	Wutsja resin
Two	Nuwa	Rueti	{ nuwa	{ rueti	Sekumat
Three	Teni	Touwru	Twenty	Puty nuwa	{ rueti
Four	Faat	Faat		{ Sekumat	{ Sekumat
Five	Nima	Rimi	Twenty-one	{ Puty nuwa	{ rueti resin
Six	Nem	Rimi samosi		{ resi sa	{ samosi
Seven	Tarassa	Rimi roeti	Thirty	Puty teni	{ Sekumat
Eight	Tarauewa	Rimi touwru		{ teni	{ touwru
Nine	Saputy	Rimi faat	Hundred	Rajda	Rajda
Ten	Pusū	Wutsja	Thousand	Repisa	Reb
Eleven	Pusū resi sa	{ Wutsja resin			
		{ kasamosi			

An account of the various plants collected during this voyage by the late M. Zippelius, the botanist to the expedition, will be found in a Dutch periodical, the *Konst-en Letterbode* for 1829, vol. i. p. 294, *et seq.*

V.—*Reise nach dem Ural, dem Altai und dem Kaspischen Meere.*

Von GUSTAV ROSE. Vol. I. Berlin, 1837.

Journey to the Ural and Altai Mountains, and to the Caspian Sea. Communicated by W. Wittich, Esq.

ABOUT twelve years since Baron Alexander von Humboldt resolved to visit the Uralian Mountains, because he conceived that there existed a similarity in the geological constitution of that range with the Andes of New Granada, and he wished to decide the point. Immediately on the court of St. Petersburg becoming acquainted with that resolution, it proposed to him to make the journey at the expense of the government of the country, authorising him at the same time to choose as companions some persons to assist him in his researches. He selected Professor Ehrenberg and Professor G. Rose, the author of the volume before us. Leaving Berlin in the spring of 1829, they went to St. Petersburg and thence through Moscow and Nowgorod to Kasan, whence they passed through Perm and over the Ural Mountains to Yekaterinburg, from which place they travelled along the eastern declivity of the Ural range as far northward as Bogoslowsk, in 60°N. lat., examining the geological constitution of the mountains and several of the numerous mines, which are met with on that side of the Ural. Having returned to Yekaterinburg they advanced to Tobolsk, and thence through the steppe of Barabinska to Bernaul, for the purpose of examining the Altai Mountains. Having traversed the steppe of Platowsk, they arrived at the Schlangenberg, and advanced afterwards to the other mines situated on the western declivity of the range. Whilst they were examining the mountains about Syrānorsk, the

most southern of these mines, they visited Baty or Khonimailakha, in lat. $49^{\circ} 10'$ N., long. $84^{\circ} 20'$ E., a military post of the Chinese on the river Irtysh. From the banks of the Irtysh they began to return, passing through the steppe of Ishim to the southern range of the Ural, and to Astrakhan and the Caspian Sea. In returning hence to St. Petersburg they visited the great salt lake of Elton. Up to the present year no account of this journey has been published, except a few observations inserted in Baron Humboldt's "*Fragmens Asiatiques*."

Professor Rose's work partly supplies this deficiency. It gives principally an account of the geological constitution of the countries through which they passed, and of its minerals, but contains also some interesting geographical observations.

In passing from St. Petersburg to Moscow they tried to ascertain the elevations of the hills of *Waldai* by barometrical observations. They found that the northern part of the table land was 724 feet above the Baltic at St. Petersburg, and the *Popowa Gora*, the highest part of the hills, did not attain more than 846 feet. Professor Rose, however, thinks that these determinations are only to be considered as approximations, on account of the considerable oscillations of the barometer.

It would however seem that the high ground which forms the watershed in the interior of Russia, between the rivers running south and north, increases in advancing eastward; for they found that the country situated between the Wialka and Kama constituted a table land, which rises to 870 feet above the sea, so that at the watershed itself the elevation must considerably exceed 1000 feet.

They crossed the Ural by the same road as Mr. Erman.* The greatest height of the pass between Klenowskaia and Kirgishanskaia does not exceed 1344 feet, which seems to be the average elevation of the range between 56° and 58° N. lat., though some rocky masses rise perhaps a thousand feet higher. This elevation is doubtless very moderate, when we consider that the base on which the range rests, at an average, is 900 feet above the sea. The Ural, which here consists of three parallel ranges, occupies a width of about twenty miles. Professor Rose observes, that in several places the range does not constitute the watershed between the rivers of Europe and Asia, but that some of them rise on the eastern declivity of the mountains, and after skirting it for some distance break through the range and mingle their waters with those of the tributaries to the Kama. This, he observes, is the case with the *Tshussowaja*, a river rising about fifty miles south of Yekaterinburg, which skirts the eastern decli-

* See Journal of R. G. S., vol. vi., p. 389.

vity of the Ural nearly as far as the parallel of that town, where it passes through the range and afterwards continues to the northward for a much greater distance along its western declivity until near 58° N. lat., it turns to the west and falls into the Kama. This river is navigable in spring, and then used for the transport of the produce of the mines of the Ural.

The elevation of Yekaterinburg is calculated, according to a series of barometrical observations, to be 768 feet above the sea; according to Humboldt's observations it is 784 feet, and according to those of Mr. Erman 976 feet.

In advancing northward along the Uralian chain it was observed that the range continued to preserve its moderate elevation until they had arrived at *Kushwinsk*, about 58° 20' N. lat., where it appears to present several summits, which attain between 2000 and 3000 feet. But the highest part of the range is situated north of 59° N. lat., where several high summits rise above it. The highest of these summits are from south to north—the *Magdalinskoi Kamen*, the *Pawdinskoi Kamen*, the *Konshekowskoi Kamen*, the *Kakwinskoi Kamen*, and the *D'eneshkin Kamen*. The last-mentioned summit lies north of 60° N. lat., and is the highest of all. According to information which the author received in 1835, these mountains have been trigonometrically measured by Fedoroff, the Russian astronomer, who accompanied Mr. Parrot to the Ararat; and he has ascertained that they rise between 8000 and 9000 feet above the sea level. If this information should prove accurate, this portion of the range attains double elevation of the highest summits of the Ural between the parallels of 54° and 55°, and those in the neighbourhood of Slatunst, where they do not exceed 4000 feet. The high mountains which we have noticed, however, are not situated in the principal range of the chain, except the Magdalinskoi Kamen; all the others are placed to the eastward of it and rise in separate peaks. Where these summits occur lateral ranges extend to the eastward and advance a considerable distance into the plain, so that the Ural here occupies a much greater breadth.

This highest part of the Uralian range is traversed by two roads. The most southern begins at *Werkoturie*, and passes through the mining district of *Nicolaye Tawdinskoi*, at the southern declivity of the Tawdinskoi Kamen; afterwards it crosses the principal chain in about 59° 15', and leads to the village of Koria and to the town of *Solikamsk*. The northern road unites *Bogoss-lowsk* in Siberia with *Tsherdin* in Europe, passing through the most northern mining district of the Ural, through that of *Petro-pawlowsk*, and on the northern side of the Kakwinskoi Kamen, crossing the principal range in 60° N. lat.

The last-mentioned road, till the year 1830, formed the boun-

dary between the known and unknown portion of the Ural. Nearly nothing farther north was known; but in 1830 an expedition of discovery was sent, and succeeded in the course of three successive years in examining the range to a distance of about a degree and a half farther north. They discovered extensive beds containing gold sand, and in some parts copper ore in abundance. Here, as well as farther south, the lower declivity of the range is covered with pine and fir trees.

Digging in a marshy ground near Bogosslowsk ($59^{\circ} 40'$ N. lat.) ice was found six feet under the surface in the beginning of July. As the same phenomenon occurs at York Factory, on Hudson's Bay (57° N. lat.), we may presume that the mean temperature of both places is similar. At Bogosslowsk grain is grown, but does not ripen every year.

In passing from Tobolsk to Bernaul, Professor Rose and his companion traversed the Steppe of Barbinska, which extends about 200 miles in breadth, between the Irtysh river and the Ob or Oby. Our traveller says, that its surface is by no means dry and arid, as is commonly thought, but on the contrary, rather suffers from an abundance of water, being chiefly covered with large and small lakes and extensive swamps, and also traversed by several small rivers, which partly fall into the Om, an eastern tributary of the Irtysh, and partly into the Irtysh and Ob. Some portions of it present a perfect level, like the sea in a calm; others are slightly undulating and covered with grass, some birch and poplar. Some lakes are salt, and occasionally the surface of the ground is covered with saline efflorescence. In this steppe a peculiar disease is prevalent, called the Siberian plague.

That portion of the Altai mountains, which was visited by our travellers, had previously been examined by von Ledebour, Meyer, and Bunge, who give a minute account of it in their travels. We consequently find here little new geographical information of importance. We learn only, that the highest portion of the Altai mountains extends east and west in the parallel of 50° , between the Bukhtarma, a branch of the Irtysh, and the Koksun, a tributary of the Ob, and that the most western of its high summits, the *Holbowukha*, loses its snow in May, but is again covered with it at the end of July; further east is a still higher summit, the *Skhtskhebenukha*; but the highest is the *Bielukha*, which lies in the meridian of the Chinese military post of Tshingistei on the Bukhtarma, and rises, according to Mr. Gebler, who visited it in 1833, to about 11,000 feet above the sea. From this high mass a range branches off to the east-south-east, through which the river *Argut* breaks. This tributary of the Katunia is a much larger river than it appears to be in our maps, rising within the boundary of the Chinese empire.

The interesting account of the traveller's visit to the Chinese military post of Baty, we cannot notice further, as it is foreign to our purpose, and we have only space for a few observations on the geographical location of the mineral riches of the Ural, which have lately risen into such importance.

The sand, containing small particles of gold, occurs along the eastern declivity of the Uralian range, in numerous places north of 56° N. lat., and extends, as we have already observed, beyond 60° N. lat. It occurs on the western declivity likewise, but only in a few places, and contains less gold. On the Siberian side of the range, the sand from which the gold is extracted contains about one and a half or two solotnik of gold in a pood, or from $\frac{1}{280}$ to $\frac{1}{940}$; that which contains less is at present not worked. But Mr. Rose says, that even sand containing only $\frac{1}{760}$ of gold can still be washed with profit. The expenses in washing gold containing between $\frac{1}{228}$ and $\frac{1}{920}$ of gold, amount commonly to $\frac{2}{5}$ of its net produce. Sometimes sand is found, of which $\frac{1}{60}$ and even $\frac{1}{60}$ is gold. A small quantity of silver is always mixed with the gold; it amounts to between 2 and 11 parts in 100. Near the Altai mountains likewise, gold sand has been discovered in some places, and they have begun working it. The first establishment for working this sand in the Ural was made in 1814, at Beresowsk, near Yekaterinburg, and since that time they have been increasing in number and extent. Last year the produce of all the Russian mines gave 27,885 marcs of gold, of which more than two-thirds were derived from the washing of the sand.

Professor Rose enters into great detail in his account of the platina mines. They are situated on the western declivity of the Ural, about the parallel of $57^{\circ} 40'$ north. He reached them on passing the range from the east; the highest part of the road rose only 1216 feet above the sea. The number of the mines is six, and they lie at a short distance from one another. In the most northern, called *Sukhowissimokoi*, the discovery of the sand containing platina was made in 1825, and at the other places it was found soon afterwards. The proportion of platina is much larger than that of gold, as it amounts on an average to $\frac{1}{40}$ of the whole mass. Sometimes pieces are found weighing some ounces, and even half a pound and upwards. A small quantity of gold is united with the platina. In 1834 platina was discovered in layers of serpentine. The produce of platina in 1836 amounted to 8270 marcs.

Whilst Baron Humboldt and his companions were travelling in the Ural, the discovery of diamonds in this range was made. Observing, that in Brazil as well as in New Granada, diamonds occurred together with gold and platina in the same beds of sand, Baron Humboldt had conjectured, some time before he went to

the Ural, that probably these precious stones might be found in the gold sand of that range, and he and his companions directed their attention to that point. Though they did not succeed in finding diamonds, these stones were discovered at that time at Bissersk (about $58^{\circ} 30'$ N. lat.), by Count Polier, in the gold-sand of this washing establishment. Two years later Mr. Major, or as he is called in Siberia, Mr. Mesher, an English engineer, who has made several steam-engines for the mines of Siberia, and is himself in possession of an establishment for washing gold-sand, in the neighbourhood of Yekaterinburg, discovered also two diamonds on his estate. Only small stones have been found, as far as is known ; and up to July, 1833, their number amounted only to 37.

Professor Rose's book contains a detailed account of the mines in the Altai mountains, which we omit, as the most important information it contains has been made known by other travellers. We shall only observe, that he gives also an interesting account of the manufacture of Koliwansk, where vases and other elegant pieces of furniture are made, in different kinds of porphyry, granite, and avanturine.

Accompanying the work is an improved map of part of Northern Asia, between the limits of 51° and 60° N. lat. and 47° and 69° E. long., on the scale of $\frac{1}{2000000}$, or $2\frac{1}{4}$ inches to a degree, and various geological sections.

VI.—*Travels in Arabia.* 1, *In the province of 'Omán* ; 2, *The Peninsula of Sinai* ; 3, *Along the shores of the Red Sea.* By Lieutenant Wellsted, Indian Navy, F. R. S. 2 vols. 8vo. London. 1837. Murray.

DURING the last twenty years, the government of India have slowly but steadily been carrying forward a series of maritime surveys that do honour to the munificent spirit of the East India Company, who directed them, and to the zeal and perseverance of the officers of the Indian navy who have been selected to carry them into execution. We are far from implying that it is only during this period that the hydrography of those shores has been alluded to ; on the contrary, the earliest records of the India-House bear abundant testimony to the constant and lively interest taken by the Directors in the improvement of the charts and navigation of the Indian Seas : but it is especially during the last twenty years that the surveys of the Persian Gulf, the shores of the Red Sea, the examination of Socotra and of the southern coast of Arabia, have been carried into execution, and have, in